ANALYSIS OF CORRELATION BETWEEN PORT EQUIPMENT AND FACILITY AND THROUGHPUT, CASE STUDY: TANJUNG PERAK PORT, SURABAYA

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ABSTRACT

Port of Tanjung Perak has several terminals are differentiated by its designation and location. Jamrud Terminal is one that has a capacity shortage problem and causing a long waiting time for berth. The solutions of those problems is to add the port facilities and equipment. Against the background of this case it is necessary to do a study on the correlation between the facilities and equipments to the port throughput. This final calculation build a model calculation to get the correlation statement between port facilities and equipments, whether positive, negative, or no affect. From the model calculations it is known that the difference between the model and the reality is 0.02% for Jamrud International port, and 4% for Jamrud Domestic port. Calculation model was then developed to determine the shortage of port capacity and seeking solutions to solve the problems. The results obtained that the solutions is to add 3 units of HMC at each North Jamrud and South, and reduce break time to be 1 hour per shift. This final project also calculated the investment, and get for every Rp. 1 investment will add the throughput of bag cargo to 0.1 kg, at 0.26 kg for dry bulk, and for general cargo 0.08 kg. The model was also developed to obtain mathematical equations with the form $Y = C + \alpha + \beta \times LD \times TGH - \lambda \times (NOT + IT)$ using multiple linear regression analysis. Where $Y$ is the throughput, $C$ is a constant, $\alpha$, $\beta$, $\lambda$ is the coefficient of the variable, the variable $LD$ is a length of port, $TGH$ is productivity, and $(NOT + IT)$ is not operational time per ship when berthing. Validation of the model equations with the model calculations, show the error of 0.42%.

Keywords: throughput; facilities; equipment; port performance; model equations